STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

Washington State Energy Code Development

Standard Energy Code Proposal Form

Jan 2022

Log No.24-RE-049 Ver 2 (06/03/25)

Code being amended: ☐ Commercial Provisions ☒ Residential Provisions

Code Section # Table R403.6.1, Table R406.3, Chapter 6

Brief Description: Increase the residential energy code's HERV energy performance thresholds to align with those approved by the Commercial Energy Code TAG, and update the reference test standard to the latest version.

Proposed code change text:

TABLE R403.6.1

WHOLE-DWELLING MECHANICAL VENTILATION SYSTEM FAN EFFICACY[a]

SYSTEM TYPE	AIR FLOW RATE (CFM)	MINIMUM EFFICACY (CFM/WATT)	TEST PROCEDURE
HRV or ERV	Any	1.~~2~~7[a]	CAN/CSA C439
Balanced ventilation system without heat or energy recovery	Any	1.2[a]	ANSI/AMCA 210-ANSI/ASHRAE 51

a. For balanced ventilation systems, HRVs and ERVs, determine the efficacy as the outdoor airflow divided by the total fan power.

[Rest of table remains unchanged.]

TABLE R406.3

ENERGY CREDITS

OPTION	DESCRIPTION	CREDIT(S)	
		All Other	Group R-2[b]
2. AIR LEAKAGE CONTROL AND EFFICIENT VENTILATION OPTIONS Only one option from Items 2.1 through 2.3 may be selected in this category.			
2.1	Compliance based on Section R402.5.1.2:	1.0	1.0

OPTION	DESCRIPTION	CREDIT(S)	
		All Other	Group R-2[b]
	Reduce the tested air leakage to 2.0 air changes per hour maximum at 50 Pascals, or for R-2 Occupancies, optional compliance based on Section R402.5.1.2: Reduce the tested air leakage to 0.25 cfm/ft^2 maximum at 50 Pascals **and** All whole house ventilation requirements as determined by Section M1505.3 of the *International Residential Code* or Section 403.8 of the *International Mechanical Code* shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.6~~5~~7. To qualify to claim this credit, the building permit drawings shall specify the option being selected, and shall specify the maximum tested building air leakage, and shall show the heat recovery ventilation system.		

Purpose of code change: This proposal coordinates the Residential Energy Code energy performance thresholds for heat or energy recovery ventilation units (HERVs) with those approved for the Commercial Energy Code by the WA State Commercial Energy Code TAG by action on proposal 24-GP1-275-Vers3.

For reference, the rationale for 24-GP1-275-Vers3 included the following analysis:

The incremental cost associated with improving HERV prescriptive performance thresholds from 1.2 cfm/W and an SRE of 60% to 1.7 cfm/W and an SRE of 67% is estimated at **$58**, based on the difference of the average of bottom quartile pricing for the 1.7/67 HERV versus the 1.2/60 HERV.

HERV pricing: sourced from publicly available, internet retail pricing collected in the spring of 2025 for a sample of models that were listed in HVI's Certified Products Directory at the time.

- The airflow assumed when interpolating for fan efficacy and SRE was 60 cfm.
- Airflows at lower cfm are expected to achieve higher fan efficacy.
- The bottom-quartile average price of units achieving 60% SRE and 1.2 cfm/W at 60 cfm was $843.
- The bottom-quartile average price of units achieving 67% SRE and 1.7 cfm/W at 60 cfm was $901 for a cost premium of ($901 - $843 =) **$58**.

Annual energy savings: 113 + 29 = 142 KWH / dwelling unit)

- Climate Zone 4C (West coast of Washington)

- 2-bedroom apartment of 1,006 ft2 (median size in U.S. for 2023, based on Census data)
- *Minimum* continuous ventilation airflow in accordance with IMC = 53 cfm, typical for 2-bedroom apartment.
- Electricity rate: $0.11/kWh (U.S. DOE EIA 2023 residential price data for Washington State)
- Building energy simulations: EnergyPlus v23.1.0 using US Department of Energy, Pacific Northwest National Lab's multifamily 2024 IECC Climate Zone 4C prototype model (heat pump space heating), available here.
- Space cooling and heating energy savings will be larger in Washington State's other climate zones (i.e., 5B and 5C).
- Annual fan energy savings:
- 53 cfm at 1.7 cfm/W = 31.0 W
- 53 cfm at 1.2 cfm/W = 43.9 W
- Fan energy savings = 43.9 – 31.0 = 12.9 W x 8760 = 113,107 Wh = **113 kWh/yr**
- Space heating and cooling energy savings estimated from energy modeling at **29 kWh/yr**
- Total monetized **savings** of **$15.62/yr**. (Simple payback of 3.7 years.)
- If financed over 30 years at 6.00%, the **payments** for the $58 premium are $0.35/month or **$4.17/year**.
- Incremental equipment cost of $58 is cash positive ($15.62-$4.17= $11.45 savings) in all years of operation.

This proposal also updates the reference to CAN/CSA C439 to the latest version (i.e., 2024). The industry is expected to transition to this standard by January 1, 2026. Note to staff: Please update the Commercial Energy Code reference to C439-24 as well.

Your amendment must meet one of the following criteria. Select at least one:

☐ Addresses a critical life/safety need.

☐ The amendment clarifies the intent or application of the code.

☒ Addresses a specific state policy or statute.
(Note that energy conservation is a state policy)

☐ Consistency with state or federal regulations.

☐ Addresses a unique character of the state.

☐ Corrects errors and omissions.

Check the building types that would be impacted by your code change:

☒ Single family/duplex/townhome

☒ Multi-family 1 – 3 stories

☐ Multi-family 4 + stories

☐ Commercial / Retail

☐ Institutional

☐ Industrial

Your name	Mike Moore	Email address	mmoore@statorllc.com
Your organization	Stator LLC, representing HVI	Phone number	303.408.7015
Other contact name	Click here to enter text.		

Economic Impact Data Sheet

Is there an economic impact: ☒ Yes ☐ No

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants, and businesses. If you answered "No" above, explain your reasoning.

The incremental first cost is estimated at $58. The simple payback associated with this cost is 3.7 years. Net annual savings to the consumer are estimated at $11.45.

Provide your best estimate of the **construction cost** (or cost savings) of your code change proposal? (See OFM Life Cycle Cost **Analysis tool** and **Instructions;** use these **Inputs**. **Webinars on the tool can be found Here and Here**)

$0.02/square foot, assuming a 2400 square-foot dwelling unit ($58/ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

See reason statement for calculations and sources.

Provide your best estimate of the **annual energy savings** (or additional energy use) for your code change proposal?

0.06 KWH/ square foot (142 kWh annually per dwelling unit)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

See reason statement for calculations and sources.

List any **code enforcement** time for additional plan review or inspections that your proposal will require, in hours per permit application:

None. The code already has requirements for minimum performance thresholds. This proposal simply increases the existing requirements.

Small Business Impact. Describe economic impacts to small businesses:

None anticipated.

Housing Affordability. Describe economic impacts on housing affordability:

Net savings are estimated at $11.45 annually.

Other. Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

Instructions: Send this form as an email attachment, along with any other documentation available, to: sbcc@des.wa.gov. For further information, call the State Building Code Council at 360-407-9255.

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.